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10 April 2018

Our Reference: 14279-17-BILR-1Rev0_180410

Fiona Bell
Senior Advisor Environmental Approvals
Rio Tinto Iron Ore
Central Park, 152-158 St Georges Terrace
Perth WA 6000

Dear Fiona,

Re: Mesa A Hub – Targeted Night Parrot Fauna Assessment, September 2017

1 Introduction

Rio Tinto Iron Ore Pty Ltd (Rio Tinto; the Proponent) is evaluating the potential development of a number of iron ore deposits within the Robe Valley, in the Pilbara region of Western Australia. One area under consideration is in the west of the Robe Valley in the vicinity of the mining areas of Mesa A and Warramboo (survey area), located approximately 50 km west of Pannawonica. Key components of the pre-feasibility and feasibility studies being undertaken are environmental surveys which are required to inform the environmental assessment process for the potential development of the survey area. Due to the recent publication of the *Interim guideline for preliminary surveys of Night Parrot* (*Pezoporus occidentalis*) (Department of Parks and Wildlife 2017) and to ensure all fauna surveys meet current guidelines, Astron was commissioned to undertake a targeted Night Parrot fauna survey in the survey area (Figure A.1, Attachment A).

The possible occurrence of this Matters of National Environmental Significance species within the survey area presents a potential management issue to ground disturbance activities for the development of the Mesa A Hub. In order to improve understanding of the potential for Night Parrot occurrence, habitat utilisation and resident population estimates, a more intensive survey was required within the survey area.

2 Scope of Work

The scope of work was to conduct a targeted Night Parrot fauna survey within the survey area in accordance with the scope of works provided by Rio Tinto (dated 17/07/2017), regulatory guidelines (Department of Parks and Wildlife 2017) and industry best practice. Specifically, the following was undertaken:

- a desktop literature review to assess the potential occurrence of the Night Parrot within the local and regional vicinity of the survey area
- a systematic field survey to:
    - verify the results of the desktop study and previous Night Parrot records

- record potential Night Parrot observations or records and assess the potential for the survey area to support a resident population of this species.

This report details the findings of the desktop and field studies.

3 Night Parrot (*Pezoporus occidentalis*)

3.1 Distribution and Conservation Status

The Night Parrot is listed as Endangered under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) and Critically Endangered (Scheduled 1) under the *Wildlife Conservation Act 1950*. Conservation category listings are detailed in Table B.1 and B.2 (Attachment B). The Night Parrot has long been thought extinct in Australia, with only sporadic and sometimes unconfirmed sightings recorded. However the focus on this species has amplified due to a recent sighting near Wiluna in Western Australia (Jones 2017) and from the rediscovery of this species in Queensland near the Pullen Pullen Reserve and at Goneaway and Diamantina National Parks (Palaszczuk and Miles 2017).

The Night Parrot has long been elusive and due to its highly cryptic behaviour has largely gone unnoticed and undetected. Now with the release of the vocal calls made by this species from Queensland, a more informed and targeted survey effort can be undertaken.

3.2 Ecology

Little is known on the ecological requirements of the Night Parrot due to the cryptic behaviour this species has previously shown. With the recent sightings of the Night Parrot and records from certain areas, ecologists have been able to better understand the species' habitat requirements.

Roosting habitat is thought to be long unburnt stands of spinifex hummocks (*Triodia* spp.), particularly large hummocks that are ring forming that would form a certain level of protection from predators. The hummocks that are < 50 cm in height and collapsed are thought not likely to provide enough shelter and/or protection from predators (Department of Parks and Wildlife 2017). Some systematic acoustic monitoring from Murphy (2015, 2016) has shown that Night Parrots in south-western Queensland regularly roosted in the same location even despite exceptionally dry conditions when no *Triodia* seed was available. However, Higgins (1999) reported that the species may be nomadic, have very large home ranges and may only be sedentary under suitable conditions, such as during mass times of seeding and flowering of *Triodia* seed.

Foraging habitat requirements are also largely unknown; however, some favoured sites, particularly in Western Australia, seem to be in close association of chenopod communities, principally the succulents of *Sclerolaena*. These succulents are possibly a source of moisture for the Night Parrot, given their preference for the arid regions of Australia and the probable lack of free standing water. Murphy (2016) suggested that Night Parrots may not rely on surface water, and instead may derive sufficient metabolic water from foraging on succulent plants, such as *Sclerolaena*. This indicates that access to water may not be required in some circumstances. It is also assumed that *Triodia* spp. would provide foraging potential particularly during times of mass seeding and flowering (Department of Parks and Wildlife 2017).

It is evident that Night Parrots have a preference for highly selective habitat and this probably explains the low level of records to date.

4 Methodology

The field survey was completed according to the relevant state and federal survey guidelines, particularly the guidelines set out by the state Environmental Protection Authority (EPA) and Parks and Wildlife Service of the Department of Biodiversity, Conservation and Attractions (DBCA):

- EPA Position Statement No. 3, Terrestrial Biological Surveys as an Element of Biodiversity Protection (Environmental Protection Authority 2002)
- Survey Guidelines for Australia's Threatened Birds: Guidelines for Detecting Birds Listed as Threatened Under the EPBC Act (Department of Environment 2010).
- Technical Guidance - Sampling Methods for Terrestrial Fauna (Environmental Protection Authority 2016a)
- Technical Guidance - Terrestrial Fauna Surveys (Environmental Protection Authority 2016b)
- Interim Guideline for Preliminary Surveys of Night Parrot (*Pezoporus occidentalis*) in Western Australia, May 2017 (Department of Parks and Wildlife 2017).

4.1 Desktop Literature Review

Prior to the field assessment a review of publically available databases was conducted. In particular, the desktop review included an examination of the previous Night Parrot records on DBCA's *NatureMap* database. The review focussed on the locations of recent survey records to help obtain an understanding on the distribution of this species from the current literature available.

In addition, the DBCA undertakes annual desktop fire regime monitoring over the Yarraloola Station (Chapman and Zdunic 2016, 2017), which overlaps a significant proportion of the survey area. The desktop fire regime monitoring helped inform the current fire age and/or status of the vegetation in the survey area, which is a key factor when determining roosting habitat for the Night Parrot.

4.2 Targeted Field Survey

The targeted field survey was conducted by Astron Zoologists Matthew Love and John Trainer on the 13, 14 and 17 September 2017. Matthew and John both have over five years of experience conducting Level 2 vertebrate fauna surveys. The survey was conducted under a "Licence to Take Fauna for Scientific Purposes" (Permit 08-000566-2).

Weather conditions were hot during the survey period. Maximum temperatures recorded at Pannawonica (50 km east of the survey area) ranged from 35.7°C to 39.6°C with minimum temperatures in the mid to upper twenties.

Conditions were considered to be dry with no seeding spinifex and very little seed remaining in the seed-heads of spinifex and other grasses, indicating that it had been many months since grasses had flowered. No rain-fed surface water was observed within the Robe River adjacent to Mesa B and Mesa C in the vicinity of the survey area. No permanent water was present in Warramboo Creek at the time of the survey. Rainfall received (based on Pannawonica weather station 005069) in three months preceding the survey was 0.3 mm, 58.9 mm less than the mean rainfall for the same three months (Bureau of Meteorology 2018). Rainfall was received earlier in the year, with a total of 602.7 mm of rainfall received in the nine months preceding the survey, 208.7 mm more than the mean rainfall for the same nine months (Bureau of Meteorology 2018). These factors are not

optimal for Night Parrot occurrence, however, they are not considered to be a major limitation given that:

- this species is generally accepted as an arid and semi-arid specialist and would be adapted to long periods of drought
- habitat assessment is a critical component of a survey, as no available survey technique can irrefutably demonstrate that Night Parrots are absent from a site (Department of Parks and Wildlife 2017).

4.2.1 Habitat Assessment

Previously, Astron conducted a flora, vegetation and fauna assessment adjacent to, and near, the survey area (Astron Environmental Services 2014). The mapped fauna habitats from the previous survey helped refine the survey effort for potential Night Parrot habitat for the current survey.

Four fauna habitat assessments were conducted within the survey area (Table C.1, Attachment C) in habitats prospective for Night Parrot occurrence. The locations are shown in Figure A.2 (Attachment A) and the following information was collected at each site:

- location – coordinates measured using a handheld GPS (GDA94)
- recorder and date – personnel involved in undertaking the fauna habitat assessment and the survey date
- vegetation type – a broad description of vegetation type and structure
- soils – a brief description of soil type
- microhabitat pertinent to the Night Parrot – potential roosting habitat such as the presence of primarily old large spinifex hummocks (>50 cm), especially hummocks that are ring forming or presence of foraging habitat such as the presence of samphire communities and/or seeding spinifex hummocks, and the presence of permanent or semi-permanent water
- condition – habitat condition was assessed based on the presence of anthropogenic (human-induced) disturbances, and using the condition ratings suggested by Thompson and Thompson (2010) (Table B.3, Attachment B)
- fire age – recorded as either recent (<2 years); young (2 to 5 years); moderate (5 to 10 years); old (>10 years); very old (>50 years)
- disturbance – any disturbance such as clearing, weeds, flooding, vehicular, machinery, tracks or grazing
- photographs – a representative photograph was taken of each habitat assessment site.

The information derived from the fauna habitat assessments, as well as the previous fauna habitat mapping from adjacent to the survey area (Astron Environmental Services 2014), was used to assess the suitability of habitat for the Night Parrot. The habitat was ranked according to the criteria listed in Table 1 and the likelihood of occurrence in the survey area utilising the criteria in Table B.4 (Attachment B).

Table 1: Suitability of habitat ranking criteria for the Night Parrot (*Pezoporus occidentalis*) within the survey area.

Species	Potential shelter and foraging habitat (a)	Suitable foraging and dispersal habitat (b)	Limited foraging and dispersal habitat (c)
Night Parrot (*Pezoporus occidentalis*)	Isolated habitat not subjected to predation pressure, fire pressure, and altered habitat from pastoralism and mining activities. Generally roosting habitat that contains old and large spinifex clumps (>50 years unburnt), particularly ring-forming hummocks. **OR** Areas highly suitable for foraging in close association (<10 km) to potential roosting habitat, including *Triodia* (particularly at times of mass flowering and seeding) and chenopod communities dominated by *Sclerolaena*.	Very little is known on the foraging requirements of the Night Parrot. Habitat within 40 km of potential roosting and nesting sites, potentially important for foraging, including chenopod communities (particularly those dominated by *Sclerolaena*), *Triodia* and areas rich in herbs, including forbs, grasses and grass-like plants.	Habitat that has limited roosting and foraging potential for the Night Parrot.

4.2.2 Autonomous Recording Units

The most effective survey technique for Night Parrots is passive acoustic surveys (Department of Parks and Wildlife 2017). Autonomous Recording Units (ARUs) were used to record the potential presence of the Night Parrot, by recording the species' vocal call. Two acoustic recording devices (Song Meter 2, SM2BAT+) were positioned in four locations. The detectors were set for between three and four nights, resulting in a total of 14 recording nights (Figure A.2, Attachment A and Table C.1, Attachment C), in accordance with the preliminary guidelines that require at least six nights of recordings (Department of Parks and Wildlife 2017). The ARUs were set to record from 1 hour pre-sunset to 1 hour post-dawn. The recordings were recorded at 44.1 k bits and covered the frequency range 100 kHz to 21,000 kHz that brackets the Night Parrot call frequency range of 1,500 kHz to 3,500 kHz.

The data collected on the SM2BAT+ detectors in the field were analysed by Robert Bullen (Bat Call WA 2017). The reference calls for the Night Parrot were available from Bat Call WA's library and compared against any potential calls made from the survey area (Bat Call WA 2017).

4.2.3 Motion Sensitive Cameras

Five motion sensitive cameras were used during the survey (Moultrie, Reconyx). Cameras were set for between six and seven nights each with a combined trapping effort of 32 camera trap nights (Figure A.2, Attachment A and Table C.1, Attachment C). The cameras were placed in prospective/suitable habitat aimed at targeting potential foraging Night Parrots in or near prospective roosting habitat.

4.2.4 Aural Listening Surveys/Nocturnal Searching

Two nights (12 person hours) of targeted nocturnal searching was conducted within the survey area. This included five locations of aural listening surveys (Figure A.2, Attachment A and Table C.1, Attachment C). The fauna team targeted the search effort in long unburnt spinifex hummocks and sat and listened for the distinct audio call of the Night Parrot. It is thought that the species' peak calling period is two hours after sunset and two hours before sunrise (Department of Parks and Wildlife 2017). Due to concerns with health, safety and fatigue only the post-sunset calling period was targeted during the fauna assessment.

5 Results

5.1 Desktop Assessment

A review of the DBCA *NatureMap* database in October 2017 for previous records of the Night Parrot reported 15 records within Western Australia. Of these, five records were made within the Interim Biogeographic Regionalisation for Australia Pilbara bioregion and only one record was reported recently or post-2000. One record was made in 1967 within the Robe River itself, located 7.6 km to the north east of the Warramboo survey area. The details of the recording are absent and the authentication of the record was determined as only 'Moderately Certain'.

In April 2005 three individuals of the Night Parrot were recorded at the onset of dusk near standing water at Minga Well adjacent to the Fortescue Marsh (Davis and Metcalf 2008). Minga Well is 360 km to the east of the survey area, situated on Mulga Downs pastoral station. Two birds were observed moving towards the water's edge and then drinking; the third bird was only seen briefly and was not resighted (Davis and Metcalf 2008). No vocalisations or noises from their wings were recorded when the individuals departed the site (Davis and Metcalf 2008). The habitat was described as a pastoral bore; however, Minga Well is situated 2 km from the edge of the Fortescue Marsh (a known priority ecological community) where succulents such as *Sclerolaena* are found.

The annual fire regime monitoring conducted by DBCA at Yarraloola (Chapman and Zdunic 2016, 2017) has shown that approximately 66% of the Mesa A Hub and 30% of the Warramboo survey areas have been affected by fire since monitoring began in 1999. In particular in 2001 a significant fire burned approximately 38% of the Mesa A Hub survey area and 29% of the Warramboo borefield survey area (Table 2).

Table 2: Summary of area burned (%) within the survey area detailed in the Yarraloola annual desktop fire regime monitoring (Chapman and Zdunic 2016, 2017).

Survey area	Year of fire event					
	1999	2001	2006	2009	2012	2014
Mesa A	0.6	38.8	9.7	2.3	11.5	3.7
Warramboo	N/A	29.5	N/A	2.2	0	N/A

5.2 Targeted Field Survey

No individual sightings, vocal calls or any other signs of the Night Parrot were recorded during the current targeted survey. The Night Parrot was not detected from the 14 nights of ARU recordings. However one of the units failed to record and no data were acquired at two sites (ARU1, ARU2) (Attachment D). No Night Parrots were recorded on any of the motion sensitive cameras from the combined trapping effort of 32 camera trap nights.

Four habitat assessments in the survey area determined the fire ages to range from recent (<2 years) to moderate (5 to 10 years) (Attachment C).

6 Discussion

The survey area is located in the western extent of the Pilbara region of Western Australia, located within an area deemed as 'species or species habitat may occur' by the Department of the Environment and Energy (Department of the Environment and Energy 2017). No individual sightings

and/or vocal calls were recorded, nor any prospective calls made on the ARUs set within the survey area. The current knowledge of habitat preference of the Night Parrot is limited, with some sources believing a matrix of long unburnt spinifex stands (>50 years) in close association with chenopod communities (samphire) is a key habitat preference. However, despite this knowledge gap, Astron considers it unlikely that the survey area is suitable for the Night Parrot as there is limited preferred habitat present and the impacts of regular fire would be too great. The only recent discovery of the Night Parrot within the Pilbara region was in 2005 in which three individuals were sighted at a pastoral bore close to the Fortescue Marsh (Davis and Metcalf 2008), supporting the theory that samphire is of some importance. Recently the Night Parrot was discovered in March 2017 in the arid region of the Mid-west in which the habitat was also described as long unburnt spinifex in association with a chenopod community (Jones 2017). Given these habitats do not occur in the survey area, the likely predation pressure from cats and dingos (sighted during the survey) and the proximity to active mining infrastructure, the chance of this species being present is considered very low.

This report was prepared by Senior Scientist Matthew Love and technically reviewed by Senior Scientist Dr Jessica Johnston and Principal Scientist Dr Robert Archibald. Should you have any further queries regarding this information, please do not hesitate to contact Melissa Ford (Project Coordinator) on 9421 9600.

Yours sincerely
ASTRON ENVIRONMENTAL SERVICES

Dr Stuart Pearse
General Manager

Attachments

Attachment A: Figures

Attachment B: Conservation Fauna Categories, Habitat Condition Scales and Likelihood Criteria

Attachment C: Survey Sampling Locations

Attachment D: Bat Call WA Pty Ltd Report

References

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Attachment A: Figures

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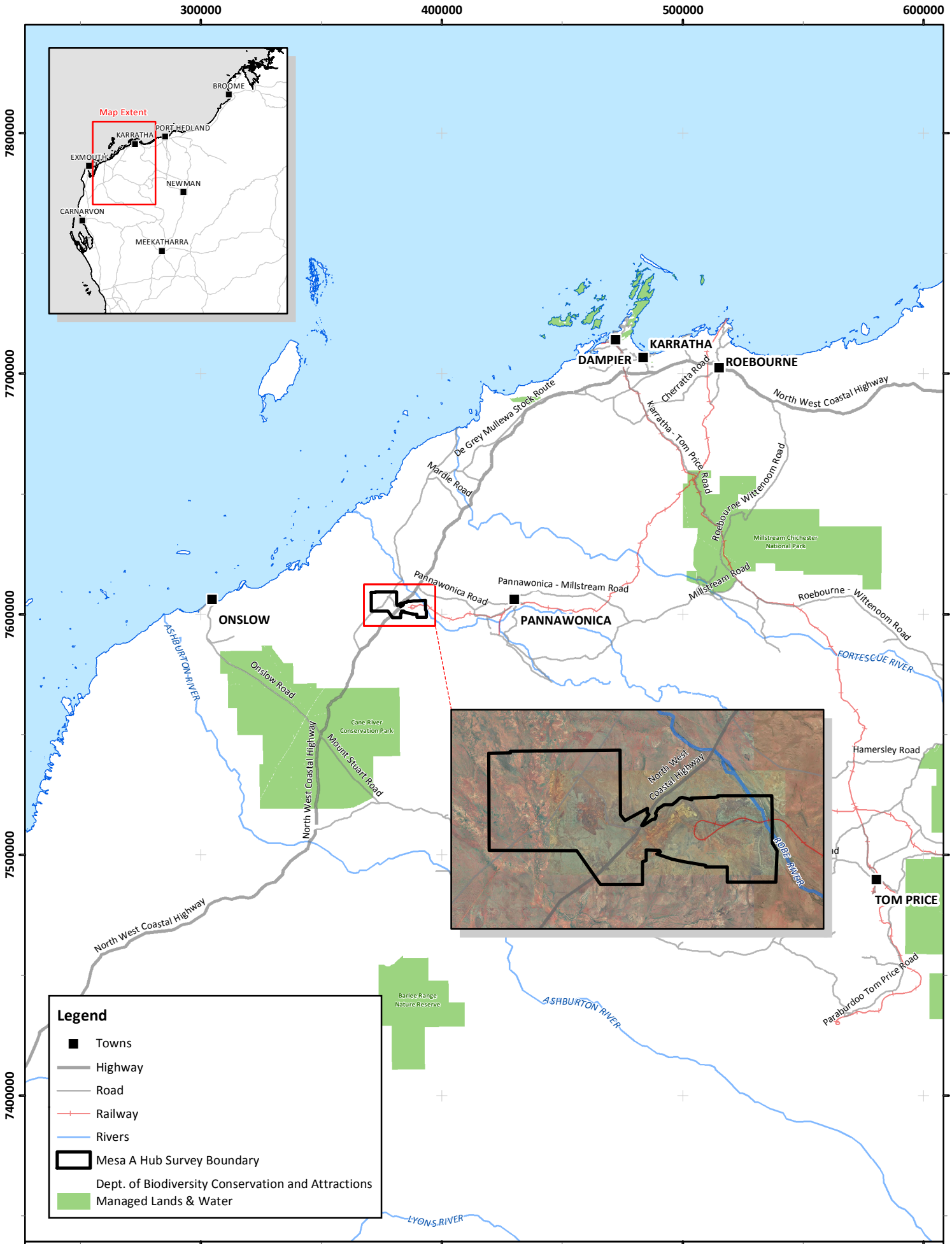

Rio Tinto Iron Ore Pty Ltd

Mesa A Hub – Targeted Night Parrot Fauna Assessment, September 2017

Figure A.1: Location Figure

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Author: M. Love	Date: 10-11-2017
Drawn: C. Dyde	Figure Ref: 14279-17-BIDR-1RevA_171110_FigA1_MesaA_Locn

Datum: GDA 1994 - Projection: MGA Zone 50

0 20 40 60 80 100 Km

N

370000 375000 380000 385000 390000

7610000

7605000

7600000

Yarraloola Rd

Robe River

Pannawonica

North West Coastal Hwy

Mesa A / Warramboo Access Rd

ARU3 HA1 AL1 CAM1 AL2

AL4 ARU4 HA4 CAM5 HA3 CAM4 AL5 CAM3

ARU2 ARU1 HA2 AL3 CAM2

Legend

- Mesa A Hub Survey Boundary
- GPS Tracklog
- Main Road
- Minor Road
- Railway

Sampling Sites

- Acoustic recording
- Active foraging
- Camera (active)
- Habitat Assessment

Rio Tinto Iron Ore Pty Ltd

Mesa A Hub – Targeted Night Parrot Fauna Assessment, September 2017

Figure A.2: Survey Effort Figure

Coordinate System: GDA 1994 MGA Zone 50

0 1 2 3 4 5 Km

N

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Author: M. Love | Drawn: C. Dyde | Date: 10-11-2017 | Figure Ref: 14279-17-BIDR-1RevA_171110_FigA2_MesaA_SurvEff

Attachment B: Conservation Fauna Categories, Habitat Condition Scales and Likelihood Criteria

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Table B.1: Categories and definitions for EPBC Act listed fauna species.

Conservation category	Definition
Extinct	Taxa with no reasonable doubt that the last member of the species has died.
Extinct in the wild	Taxa known to survive only in cultivation, in captivity or as a naturalized population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriated seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
Critically endangered (CR)	Taxa facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
Endangered (E)	Taxa are not critically endangered; and are facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
Vulnerable (V)	Taxa are not critically endangered or endangered; and are facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
Conservation dependent (CD)	Taxa are the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or the following subparagraphs are satisfied: i) the taxa is a species of fish; ii) the taxa is the focus of a management plan that provides management actions necessary to stop the decline of, and support the recovery of, the taxa so that its chances of long term survival in nature are maximized; iii) the management plan is in force under a law of the Commonwealth or of a State or Territory; iv) Cessation of the management plan would adversely affect the conservation status of the taxa Fish includes all taxa of bony fish, sharks, rays, crustaceans, molluscs and other marine organisms, but does not include marine mammals/reptiles.

Table B.2: Conservation codes for Western Australian fauna (Department of Parks and Wildlife 2015).

Code	Conservation category	Definition
CR	Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice under the Wildlife Conservation Act 1950.	Fauna that is rare or likely to become extinct, as critically endangered fauna.
EN	Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice under the Wildlife Conservation Act 1950.	Fauna that is rare or likely to become extinct, as endangered fauna.
VU	Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice under the Wildlife Conservation Act 1950.	Fauna that is rare or likely to become extinct, as vulnerable fauna.
EX	Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice under the Wildlife Conservation Act 1950.	Fauna that is presumed to be extinct.
IA	Schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice under the Wildlife Conservation Act 1950.	Birds that are subject to international agreements relating to the protection of migratory birds.
CD	Schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice under the Wildlife Conservation Act 1950.	Fauna that are of special conservation need being species dependent on ongoing conservation intervention.
OS	Schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice under the Wildlife Conservation Act 1950.	Declared to be fauna that is in need of special protection, otherwise than for the reasons mentioned.

Reference: Department of Parks and Wildlife 2015, *Conservation Codes For Western Australian flora and fauna*, The Government of Western Australia.

Table B.3: Fauna habitat condition scale (Thompson and Thompson 2010).

Habitat condition	Condition description
High Quality Fauna Habitat (1.0)	These areas closely approximate the vegetation mix and quality that would have been in the area prior to any human induced disturbance. The habitat has connectivity with other habitats and is likely to support the most natural vertebrate fauna assemblage.
Very Good Fauna Habitat (0.8)	These areas show minimal signs of human induced disturbance (e.g. grazing, clearing, fragmentation, weeds) and retain almost all of the characteristics of the habitat had it not been disturbed. The habitat has connectivity with other habitats, and fauna assemblages in these areas are likely to be minimally effected by disturbance.
Good Fauna Habitat (0.6)	These areas show signs of human induced disturbance (e.g. grazing, clearing, fragmentation, weeds) but generally retain many of the characteristics of the habitat had it not been disturbed. The habitat still retains some connectivity with other habitats but fauna assemblages in these areas are likely to be affected by disturbance. Fauna assemblages in these areas are likely to be similar to what might be expected in this habitat.
Disturbed Fauna Habitat (0.4)	These areas show signs of human induced significant disturbance (e.g. mining, clearing, tracks and roads). Many of the trees, shrubs and undergrowth have died or have been cleared. These areas may be in the early succession and regeneration stages. Areas may show signs of significant grazing, contain an abundance of weeds or have been damaged by vehicles or machinery. Habitats are fragmented or have limited connectivity with other fauna habitats. Fauna assemblages in these areas are likely to differ significantly from what might be expected in the area had the disturbance not occurred.
Highly Degraded Fauna Habitat (<0.2)	These areas often have a significant human induced loss of vegetation, and / or a large number of vehicle tracks and / or have been completely cleared, and / or areas have been heavily grazed or farmed. There is limited or no fauna habitat connectivity. Fauna assemblages in these areas are likely to differ significantly from what existed prior to the disturbance, and are often depleted compared to what existed prior to the disturbance.

Reference: Thompson, SA & Thompson, GG 2010, *Terrestrial Vertebrate Fauna Assessments for Ecological Impact Assessment*, Terrestrial Ecosystems, Mt Claremont.

Table B.4: Criteria used to define likelihood of occurrence of conservation significant fauna species.

Likelihood of occurrence	Pre-survey	Post-survey
Recorded	N/A	Species or evidence of species recorded during survey.
High	Species has been recorded within the survey area or within 20 km of the survey area and preferred habitat appears to be present.	Core or preferred habitats present in the survey area which are abundant and/or high quality condition. OR Species is known to be cryptic and may not have been detected despite adequate survey effort and suitable habitat present within the survey area. OR Species or evidence of species recorded within the survey area however doubt remains over the taxonomic identification, validity of record.
Moderate	Species has not been recorded from within the survey area, however species has been recorded within 20 km of the survey area and suitable habitat appears to be present.	Core or highly suitable habitats present in the survey area, however, non-cryptic species that was not detected despite adequate survey effort. OR Core or preferred habitats present in the survey area are mainly in poor or modified condition.
Low	Species recorded within 20 km of the survey area but suitable habitat does not appear to be present.	Species has not been recorded in the survey area despite adequate survey effort. OR Species dependent on specific habitats that do not occur in the survey area. OR Species considered locally extinct.

Attachment C: Survey Sampling Locations

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Table C.1: Astron fauna sampling locations.

Site ID	MGA Zone 50K		Sampling method	Date	Habitat	Condition	Disturbance	Microhabitats	Photo
	Easting (mE)	Northing (mN)							
AL1	380990	7608983	Active foraging	13/09/2017	Stony Plain	0.8	Drill tracks	N/A	No photo
AL2	378953	7607017	Active foraging	13/09/2017	Stony Plain	1.0	None	N/A	No photo
AL3	381355	7598971	Active foraging	13/09/2017	Stony Plain	0.8	Grazing	N/A	No photo
AL4	388977	7603038	Active foraging	17/09/2017	Stony Plain	1.0	None	N/A	No photo
AL5	392289	7599305	Active foraging	17/09/2017	Stony Plain	0.8	Grazing	N/A	No photo
ARU1	381293	7599064	Acoustic recording	13/09/2017	Stony Plain	1.0	None	N/A	No photo
ARU2	381262	7599212	Acoustic recording	17/09/2017	Stony Plain	1.0	None	N/A	No photo
ARU3	380088	7608911	Acoustic recording	13/09/2017	Stony Plain	0.8	Grazing	N/A	No photo
ARU4	391731	7602261	Acoustic recording	17/09/2017	Stony Plain	1.0	None	N/A	No photo
CAM1	380085	7607799	Camera (active)	13/09/2017	Stony Plain	1.0	None	N/A	No photo
CAM2	381268	7599028	Camera (active)	13/09/2017	Stony Plain	0.8	Grazing	N/A	No photo
CAM3	392270	7599191	Camera (active)	14/09/2017	Stony Plain	1.0	None	N/A	No photo
CAM4	391173	7600873	Camera (active)	14/09/2017	Stony Plain	0.8	Drill tracks	N/A	No photo
CAM5	387491	7601970	Camera (active)	14/09/2017	Stony Plain	1.0	None	N/A	No photo
HA1	380087	7608911	Habitat Assessment	13/09/2017	Stony Plain	0.8	Clearing for drilling; mineral exploration; grazing	Moderately sized *Triodia* hummocks <30 cm; no chenopod communities; no refuge from fire; fire age approx. 1 to 3 years	

Site ID	MGA Zone 50K		Sampling method	Date	Habitat	Condition	Disturbance	Microhabitats	Photo
	Easting (mE)	Northing (mN)							
HA2	381292	7599064	Habitat Assessment	13/09/2017	Stony Plain	0.8	Clearing for drilling; mineral exploration; grazing	Moderately sized *Triodia* hummocks <40 cm; no chenopod communities; no refuge from fire; fire age approx. 2 to 5 years	
HA3	391174	7600873	Habitat Assessment	14/09/2017	Stony Plain	1.0	Grazing	Moderately sized *Triodia* hummocks <50 cm; no chenopod communities; no refuge from fire; fire age approx. 5 to 10 years	
HA4	387491	7601970	Habitat Assessment	14/09/2017	Stony Plain	1.0	Grazing	Moderately sized *Triodia* hummocks <40 cm; no chenopod communities; no refuge from fire; fire age approx. 2 to 5 years	

Condition

1.0 (Excellent)
0.8 (Very Good)
0.6 (Good)
0.4 (Poor)
0.2 (Very Poor)

Attachment D: Bat Call WA Pty Ltd Report

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Bat Call WA Pty Ltd

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10 October 2017

Rio Tinto CAT 3 Vendor Number 11027089

Matthew Love
Senior Environmental Scientist
Astron Environmental Services
129 Royal St,
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Western Australia

Rio Tinto Mesa A and H targeted Night Parrot survey

Astron Environmental Services has provided Bat Call with a series of audio recordings made at Mesa A and Mesa H in September 2017. These recordings were made at eight locations, four at each mesa, and targeted Night Parrot (*Pezoporus occidentalis*) presence. They were made using Songmeter SM2 audio detectors fitted with SMX-II microphones. Reference calls for the Night Parrot for comparison were available from Bat Call's library.

The recoding data and results for each site are summarised in the following tables.

Mesa A	Date	Recording Time & SM2 unit	Easting	Northing	Night Parrot presence detected
SM002468A	13 to 16 September	Detector failed to record	381293	7599064	No
SM002468B	17 to 20 September	Detector failed to record	381262	7599212	No
SM007982A	13 to 16 September	Four overnight recordings using SM2 SN 7982	380088	7608911	No
SM007982B	17 to 19 September	Three overnight recordings using SM2 SN 7982	391731	7602261	No

Mesa H	Date	Recording Time & SM2 unit	Easting	Northing	Night Parrot presence detected
SM004685A	15 to 17 September	Three overnight recordings using SM2 SN 4685	421585	7591008	No
SM004685B	18 to 20 September	Three overnight recordings using SM2 SN 4685	415745	7598784	No
SM004698A	15 to 17 September	Three overnight recordings using SM2 SN 4698	422451	7591151	No
SM004698B	18 to 20 September	Three overnight recordings using SM2 SN 4698	416396	7599262	No

Yours sincerely

Robert Bullen
Managing Director and Principal Ecologist